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Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) An X-ray tomograph comprising:

a radiation source and a radiation detector arranged opposite to each other, between which a bed with an examinee placed thereon is provided, said radiation source and radiation detector turning around said bed which can be moved with respect to this go-around axis, radiation irradiated from said radiation source and passing through the examinee being detected using said radiation detector; and

reconfiguration means for creating a three-dimensional tomographic image in a region in concern of the object from the detected projection data,

wherein said reconfiguration means determines, for each voxel, a projection data phase range ~~capable of back-projection having an operating projection data phase width~~ as an optional angle of 180 degrees or more, superimposes a reconfiguration filter, assigns weights to data of the same phase or opposite phase for each phase for this projection data phase range and three-dimension back projects this filter-processed projection data over said projection data phase range determined for each voxel ~~determined data range capable of back-projection~~ along the irradiation trace of the radiation beam.

2. (currently amended) The X-ray tomograph according to claim 1, wherein when determining said projection data phase range, a projection data phase range is determined so that the difference in the absolute values of cone angles at both ends of the projection data phase range used is reduced.

3. (currently amended) The X-ray tomograph according to claim 2, wherein the projection

data phase ~~width~~ range used is determined so as to be the same phase ~~width~~ range for each voxel.

4. (currently amended) The X-ray tomograph according to claim 1, wherein said projection data phase range ~~capable of back projection~~ is either 270 degrees or 360 degrees.

5. (currently amended) The X-ray tomograph according to any one of claims 1 to 4, wherein projection data whose number of images taken per rotation is a multiple of the number of sides C of a polygonal display pixel is acquired, and said reconfiguration means comprises back projection means for superimposing said reconfiguration filter on this projection data, grouping data in the same channel position and having projection phases in the go-around direction shifting by 2 Nπ/C (N=1, 2, 3, ...) ~~[rad]~~ radians at a time and performing back projection to a square image array group by group.

6. (currently amended) The X-ray tomograph according to any one of claims 1 to 4, wherein said reconfiguration means converts the projection data obtained to data including fan beam data and parallel beam data whose number of images taken per rotation is a multiple of the number of sides C of a polygonal display pixel, superimposes the filter on this projection data, groups data in the same channel position and having projection phases in the go-around direction shifting by 2Nπ/C (N=1, 2, 3, ...) ~~[rad]~~ radians at a time and performs back projection to a square image array group by group.

7. (currently amended) The X-ray tomograph according to ~~any one of claims 1 to 6~~ claim 1, wherein associating means is provided for associating pixel intervals in the body axis direction of the image using polygonal display pixels with the relative moving speed between the object and said radiation source in the go-around axis direction.

8. (currently amended) The X-ray tomograph according to claim 7, wherein said associating means is constructed so that the relationship between pixel interval rpitch in the body axis direction of said square image and the relative moving speed [[J]] in the go-around axis direction of the object and said radiation source is expressed by [[J=]] 2·N·rpitch (N=1, 2, 3... ...).

9. (currently amended) The X-ray tomograph according to ~~claims 7 and 8~~ claim 8, wherein at the phase of Nπ (N=1, 2, 3, ...) ~~[rad]~~ radians of the radiation source, the position on the radiation detector at which the beam passing through a voxel I (x, y, Z) whose body axis direction position is Z [[[mm]]] millimeters and a voxel I (-x, -y, NJ/2+Z) whose body axis direction position is N·J/2+Z [[[mm]]] millimeters intersects remains the same.

10. (currently amended) An X-ray tomograph comprising:

a radiation source and a radiation detector made up of two-dimensionally arranged detection elements, arranged opposite to each other, between which a bed with an examinee placed thereon is provided, said radiation source and radiation detector turning around said bed which can be moved with respect to this go-around axis, radiation irradiated from said radiation source and passing through said examinee being detected using said radiation detector; and

reconfiguration means for creating a three-dimensional tomographic image in said region in concern of the examinee from the detected projection data,

wherein said reconfiguration means determines, for each voxel, a projection data phase range ~~capable of back projection for each reconfigured voxel~~ as an optional angle of 180 degrees or more,

calculates an approximate straight line for a curve ~~indicating the radiation source position with respect to said channel direction position of parallel beam projection data corresponding to said region in concern obtained by a parallel beam of a parallel shape viewed from the go-around axis~~

~~direction generated from said radiation source~~ obtained by projecting a spiral trace of an X-ray source with respect to said examinee onto a plane parallel to said go-around axis,

corrects each row of the projection data by multiplying a coefficient which is dependent on the angle of inclination of radiation from said radiation source,

carries out one-dimensional rearrangement processing for obtaining parallel beam projection data from the fan beam projection data obtained from a fan-shaped fan beam viewed from the go-around axis direction generated from said radiation source, and

superimposes said reconfiguration filter on said parallel projection data to generate filter-processed parallel projection data, and

three-dimension back projects the parallel beam projection data subjected to said filter processing based on said projection data phase range determined for each voxel to the back projection region ~~determined projection data range capable of back-projection to the back projection region~~ corresponding to said region in concern along the approximate irradiation trace using said approximate straight line.

11. (currently amended) The X-ray tomograph according to claim 10, wherein said reconfiguration means performs redundancy correction weighting for generating a weighting factor from a weighting function in the phase direction to correct data redundancy at each phase according to said projection data phase range determined ~~the phase width of this determined projection data,~~ and

said parallel beam three-dimensional back projection means assigns said weighting factor generated ~~the weighting factor obtained by said redundancy correction weighting means~~ to the projection data within said projection data phase range determined ~~determined projection data phase range~~ and performs three-dimensional back projection along said approximate trace to the back projection region.

12. (currently amended) The X-ray tomograph according to claim 11, wherein ~~in determining~~ said projection data phase range~~, it is possible to determine the phase range~~ of ~~fπ [rad]~~ π to 2π radians is determined in the view direction and ~~perform~~ redundancy correction is performed using the weighting function by the redundancy correction weighting means.

13. (currently amended) The X-ray tomograph according to claim 10, wherein said ~~operating data phase range determines the~~ projection data phase range capable ~~of back projection for each reconfigured voxel so that the maximum cone angle of the beam back projected for each voxel becomes narrowest~~ is determined so that a beam having a narrowest cone angle, amongst beams passing through said voxel, is selected.

14. (currently amended) The X-ray tomograph according to claim 10, wherein in calculating said ~~operating~~ projection data phase range, [[the]] a projection data range ~~capable of back projection for each reconfigured voxel~~ is determined so that [[the]] a phase ~~direction~~ range of [[the]] a beam back projected for each voxel is set to ~~the narrowest possible range~~ narrower than 2π.